

Serial No. 10/769,763

Attorney Docket No. 01-503-TB

REMARKS

Claims 9, 10, 17, 18, and 22-28 have been canceled. Claims 29-32 are new. Claims 1-8, 11-16, 19-21, 29-32 are pending. Applicants respectfully request reconsideration and allowance of this application in view of the above amendments and the following remarks.

Claim 4 has been amended only for antecedent basis purposes.

Claims 1-5, 11, 14, 15 and 19-21 are rejected under 35 U.S.C 103(a) as being unpatentable over Schoenthaler (US Patent No. 5,165,984) in view of Higuchi (US patent No. 6,831,236). Applicants respectfully request that this rejection be withdrawn for the following reasons.

Claim 1, as presently amended, recites that at least one of the substrate of the first and second board parts comprises a thermoplastic resin substrate made only of a thermoplastic resin and that said first and said second board parts are joined at their respective stacked regions by the thermoplastic resin. Support for these amendments may be found, for example, at paragraph, page 14, lines 6-21 of the specification. With such a configuration, the first and the second board parts can be joined without the need for a separate adhesive layer.

With respect to a process limitation suggested in page 4, lines 8-16 of the office action, claim 1 has also been amended to delete the process limitation in consideration of the Examiner's suggestion and to recite the connection of the stacked regions of the first and second board parts in a structural manner.

In the rejection, the Examiner asserts that Higuchi discloses a printed circuit board including a thermoplastic polyimide layer made of thermoplastic polyimide as an adhesive layer

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to adhere insulating layers of a printed circuit board to one another (see column 13, lines 45-47 of Higuchi). There is no disclosure with respect to a board part only of a thermoplastic resin and stacked without an adhesive layer, as recited in amended claim 1.

In view of the above, Applicants respectfully submit that the rejection of claim 1 under 35 U.S.C. 103(a) is improper at least for the above-noted reasons and should therefore be withdrawn. Applicants also submit that dependent claims 2-5, 11, 14, 15, 19-21, which are at least patentable due to their respective dependencies from claim 1 and for the reasons noted above, recite additional features that further distinguish the claimed invention over the prior art of record. Additionally, claim 14 also has been amended to clarify that the recited insulating layers are made only from a thermoplastic resin.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection.

Claims 6-8 and 16 were rejected under 35 U.S.C. 103(a) as being unpatentable over Schoenthaler in view of Jones (US Patent No. 6,593,534) and Kawakita (US Patent No. 5,914,358).

Schoenthaler is deficient for the reasons noted above. Jones and Kawakita disclose wiring board structures including a conductive paste of tin and silver. However, neither Jones nor Kawakita teaches that tin of a connection material and copper of first and second interconnection patterns are solid-phase diffused into each other to form a solid diffusion layer, so that the connection material is connected to the interconnection patterns by a metal diffusion junction.

Claim 6, as amended, recites that the connection material is connected to the first and second interconnection patterns by a metal diffusion junction, and claim 7 recites that the tin and

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the copper are solid-phase diffused into each other to form interfaces therebetween. Support for these limitations may be found, for example, in pages 15, lines 3-10, and in the paragraph bridging pages 15 and 16 of the specification. It is noted that the recited features distinguish the claimed circuit board from the prior art. Applicants respectfully submit that claim 6 is not obvious over Schoenthaler in view of Jones and Kawakita. Further, claims 7 and 8 depend from claim 6 and are also allowable for the above noted reasons.

Claim 16 depends from claim 14, and recites additional features of the invention. Therefore, claim 16 is at least patentable due to its dependency from claim 14 and for the reasons noted above.

Applicants note with appreciation that claims 12 and 13 were indicated as allowed in the Office Action. However, as claim 12 was a dependent claim, it has been rewritten in independent form to include all limitations of base claim 1. For this reason, it is respectfully submitted that amended claim 12 is in condition for allowance. Further, claim 13 which depends from claim 12 is also in condition for allowance.

Additionally, Applicants have added new claims 29-32. Claim 29 specifically recites the adhesive property of the thermoplastic resin of the thermoplastic resin substrate. Claims 30 and 31 recite the feature of the substrate of the first and second boards to function as an insulator (see, for example, page 11, lines 13-22, page 20, lines 15-25). Claim 32 depends from claim 4 and recites that the first board part has a lower melting point than the second board part.

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In view of the foregoing, Applicants submit that this application is in condition for allowance. A timely notice to that effect is respectfully requested. If questions relating to patentability remain, the examiner is invited to contact the undersigned by telephone.

If there are any problems with the payment of fees, please charge any underpayments and credit any overpayments to Deposit Account No. 50-1147.

Respectfully submitted,



David G. Posz
Reg. No. 37,701

Posz Law Group, PLC
12040 South Lakes Drive, Suite 101
Reston, VA 20191
Phone 703-707-9110
Fax 703-707-9112
Customer No. 23400